EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-02

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-10-060	11/30/2010 To 07/31/2012 Base Option Period Number 1	1-02, WSI technical support

Contractor: COMPUTER SCIENCES CORPORATION

Specify Section and paragraph of Contract SOW: 2.2, 2.8.1, 2.11, 2.15, 2.16, 2.17, 3.1.1, 3.1.2,

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 08/01/2011 To 07/31/2012

Comments:
This establishes WA 1-02 and requests a work plan and cost estimate for the support during Option Period 1 for the attached PWS. Estimated LOE is 17,835 direct labor hours. No costs shall be incurred against this WA until the effective date of 8/1/11.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/30/2010 To 07/31/2012		0
This Action:		17,835
Total:		17,835

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Steve Allgeier	Branch/Mail Code:
(Signature) (Date)	Phone Number: 513-569-7131
	FAX Number:
Project Officer Name: Nancy Muzzy	Branch/Mail Code:
(Signature) (Date)	Phone Number: 513-569-7864
	FAX Number:
Other Agency Official Name	Branch/Mail Code:
(Signature) (Date)	Phone Number:
	FAX Number:
Contracting Official Name: Cathy Basu	Branch/Mail Code:
(Signature) (Date)	Phone Number: 513-487-2042
	FAX Number:

WORK ASSIGNMENT
PERFORMANCE WORK STATEMENT

Contract No. EP-C-10-060
Work Assignment: WA 1-02

WAM: Steve Allgeier
Water Security Division / Office of Water
Mail code: TSC-140
26 W. Martin Luther King Drive
Cincinnati, OH 45268
Phone: (513) 569-7131 / FAX: (513) 569-7191
E-mail: allgeier.steve@epa.gov

Alternate WAM: Elizabeth Hedrick
Water Security Division / Office of Water
Mail code: TSC-140
26 W. Martin Luther King Drive
Cincinnati, OH 45268
Phone: (513) 569-7296 / FAX: (513) 569-7191
E-mail: hedrick.elizabeth@epa.gov

Task Managers:

Name	Phone	Fax	E-mail Address
Steve Allgeier	513-569-7131	513-569-7191	Allgeier.Steve@epa.gov
Chrissy Dangel	513-569-7821	513-569-7191	Dangel.Chrissy@epa.gov
Elizabeth Hedrick	513-569-7296	513-569-7191	Hedrick.Elizabeth@epa.gov
Dan Schmelling	202-564-5281	202-566-0055	Schmelling.Dan@epa.gov
Katie Umberg	513-569-7925	513-569-7191	Umberg.Katie@epa.gov
Matt Umberg	513-569-7357	513-569-7191	Umberg.Matt@epa.gov

LOE: 17,835 hours

PWS Sections: 2.2, 2.8.1, 2.11, 2.15, 2.16, 2.17, 3.1.1, 3.1.2, 3.1.3, 3.1.5, 3.1.6, 3.1.7, 3.1.8, 3.1.13, 3.1.14, 3.1.15, 3.1.18, 3.2, 3.4

Period of Performance: August 1, 2011 to July 31, 2012

Title: Water Security Initiative: System Evaluation, Sampling and Analysis, Water Quality Monitoring and Event Detection, and Public Health Surveillance

I. PURPOSE:

This work assignment supports the mission of the Water Security Division (WSD) as described in the Water Security Strategy framework, which relates resources, activities, outputs, audience, short- and long- term outcomes to the WSD pillars of Prevention, Detection, Response, and Recovery.

Additionally, this work assignment contributes to the commitments made in EPA's Strategic Plan: 2011 to 2015 and EPA's Homeland Security Strategy (2004). Under EPA's Strategic Plan, reference is made to Goal 2 (Clean and Safe Water), Objective 2.1 (Protecting Human Health), Sub-objective 2.1.1 (Water Safe to Drink), and to the Cross-Goal on homeland security. Under EPA's Homeland Security Strategy, reference is made to Objective 1 (Critical Infrastructure Protection).

In support of these requirements, this contract supports the nation's drinking and wastewater infrastructure, collectively known as the Water Sector, in being informed, coordinated, and prepared to prevent, detect, respond to, and recover from terrorist attack and other intentional acts, natural disasters, and other hazards (referred to as the "all hazards' approach), which may also occur, including the needs and challenges posed by natural disasters, catastrophic events, adaptation and impacts of climate change, floods, earthquakes, pandemic illness, and any other events which impact the safety and availability of our water supply.

In pursuit of these efforts, the contractor may be tasked with preparing a correlation summary comparing the results under this work assignment to the components of the Water Security Strategy framework.

The purpose of this work assignment is to: 1) support evaluation of the contamination warning system (CWS) deployed at the Greater Cincinnati Water Works (GCWW); 2) provide technical support and consultation to Cooperative Agreement expansion pilots; and 3) develop products and guidance to support expansion of the Water Security initiative (WSi). The objective of this effort is to demonstrate the feasibility and benefits of implementing a contamination warning system, both for detecting contamination incidents as well as improving the day-to-day operation of a drinking water system. This objective is consistent with the mission of the United States Environmental Protection Agency (EPA) in the area of drinking water security and is a significant step towards fulfilling EPA's responsibilities under Homeland Security Presidential Directive #9 (HSPD-9). While the deployment of demonstration pilots is a significant focus of this initiative, the ultimate goal of this effort is to develop guidance on the design and implementation of a demonstrated and proven contamination warning system for use by all drinking water systems in the United States.

The contractor shall support EPA in the three major areas defined above, through the specific tasks described in detail under Section IV of this Work Assignment (WA). This work assignment focuses on the following elements of contamination warning system demonstration: system evaluation, sampling and analysis, public health surveillance, online water quality monitoring, water quality event detection and data management, and guidance on development of an operational strategy.

This project will require collaboration with a number of other groups both within and outside of EPA. In particular, it will be necessary to work closely with the other EPA teams working on HSPD-9 or related activities such as: consequence management, consumer compliant surveillance, enhanced security monitoring, communications, and the Water Laboratory Alliance (WLA). Furthermore, the results of ongoing, relevant research should be integrated into the project in a timely and efficient manner, particularly research in the areas of monitoring and detection, analytical methods, rapid field testing, and event detection.

II. BACKGROUND:

A contamination warning system involves the active deployment and use of monitoring technologies/strategies and enhanced surveillance activities to collect, integrate, analyze, and communicate information to provide a timely warning of potential water contamination incidents and initiate response actions to minimize public health and economic impacts. The five monitoring and

surveillance components of the Water Security contamination warning system include:

- Sampling and analysis (including field safety screening and rapid field testing that occurs as part of site characterization) to establish a baseline for key parameters and contaminants, and triggered sampling and analysis implemented in response to an alarm from other monitoring and surveillance components of the contamination warning system.
- Public health surveillance to detect potential disease outbreaks in the population and determine if the cause of the outbreak was related to drinking water.
- Online monitoring of water quality parameters to detect a change from an established baseline that could be indicative of contamination.
- Enhanced security monitoring to detect physical intrusions into a drinking water system.
- Consumer complaint surveillance to detect contaminants with a discernable odor, taste, or appearance.

Three of the five monitoring and surveillance components are covered under this WA: sampling and analysis, public health surveillance, and online water quality monitoring, including water quality event detection. Enhanced security monitoring, consumer complaint surveillance, and the accompanying consequence management activities are addressed under WA 1-01 of this contract period of performance.

Deployment of the contamination warning system model described above has required the application of a diverse set of tools and skills including: techniques used in public health surveillance, hydraulic modeling, operation and maintenance of online monitoring equipment, sample plan design, data management and analysis, cross-organization coordination, and general project management. Under a previous contract, implementation of the WSi-CWS model at the first WSi pilot was completed. In August 2008, the Cincinnati pilot began transitioning to full deployment, as described under the Cooperative Research and Development Agreement (CRADA) between EPA and the City of Cincinnati. Transfer of operation and maintenance of all aspects of the Cincinnati pilot to GCWW and local partners prior was completed by the end of the CRADA on June 6, 2009. EPA continued collection of evaluation data from the GCWW pilot until June 30, 2010. Analysis of that data will continue under this work assignment.

Additionally, during this option period, EPA will work with four utilities under cooperative agreements. Awards to these four cooperative agreement pilots have been made and significant activities related to those pilots will continue during this work assignment. EPA will support the cooperative agreement pilots through consultation and product review during the design and implementation phase of contamination warning system deployment; however, due to the nature of the cooperative agreement pilots, EPA will be significantly less involved than with the GCWW pilot. The activities under subtasks that describe "support to cooperative agreement pilots" are estimated based on EPA's anticipated level of involvement across the four cooperative agreement pilots. These estimates should be used to develop the work plan in response to this statement of work, but the actual level of effort could deviate from work plan projections and will be tasked through technical direction. Furthermore, support in review and evaluation of submissions from cooperative agreement pilots should be in accordance with appropriate Contracting Officer guidance in cases where sub-contractors are being utilized who also may support the cooperative agreement pilots.

Finally, during this option period, EPA will continue and increase efforts to develop products (guidance, tools, publications, etc.) to assist drinking water utilities and their partners (e.g., public health agencies, laboratories, Hazmat responders, etc.) in the deployment of drinking water contamination warning systems. In addition to the development of products for individual components, EPA will be developing a Contamination Warning System Deployment Tool (CWS-DT) to serve as a central, unifying platform for WSi products. While development of the CWS-DT is being developed under WA 1-01, several sub-tasks under WA1-02 will develop content for the CWS-DT.

III. QA REQUIREMENTS:

Some of the tasks in this work assignment require the use of primary and/or secondary data. Collection, use and analysis of data will be identical to the procedures described in the QAPP completed under WA 0-02, consistent with the Agency's quality assurance (QA) requirements. Work on these tasks cannot proceed until the contractor receives notification from the PO via e-mail that utilization of the QAPP completed under WA 0-02 has been approved for use on these tasks. The project specific quality assurance requirements (QAPP) must be addressed in the monthly progress reports as specified under Task 0, below.

IV. DETAILED TASK DESCRIPTION:

In addition to Task 0, *Work Plan, Progress Evaluations, and Monthly Progress Reports*, there are 7 tasks described in this work assignment. In addition to the WAM named on the title page, a Task Manager (TM) will be assigned to each task and will also be authorized to provide technical direction to the contractor for that task. A summary listing of the tasks, along with the associated TM is shown in the following table.

Task #	Task Title	Task Manager
0	Work Plan, Progress Reports, and Project Tracking	Steve Allgeier
1	Project Management and Coordination	Dan Schmelling
2	System Evaluation	Steve Allgeier
3	Sampling and Analysis	Elizabeth Hedrick
4	Public Health Surveillance	Chrissy Dangel
5	Water Quality Monitoring Sensor Hardware	Matt Umberg
6	Water Quality Data Management and Event Detection	Katie Umberg
7	Update the Operational Strategy Guidance Document	Steve Allgeier

All direction under this work assignment will be provided as written technical direction from the Task Manager (TM), Work Assignment Manager (WAM) or alternate Work Assignment Manager, as appropriate. If provided first as verbal technical direction to the contractor, it will be confirmed in writing within 5 calendar days, with a copy to the Project Officer and the Contracting Officer, and is subject to the limitations of Technical Direction Clause. Each initial deliverable shall be provided to the EPA WAM and TM in draft form for review and comment. The contractor shall incorporate EPA review comments into revisions of the drafts. All drafts and final reports are subject to approval by the TM or WAM.

In any task that involves technical writing, the contractor shall utilize staff that demonstrate a high level of proficiency in technical writing. The contractor shall notify the WAM or TM of all staff involved in the production of technical products and guidance. Resumes shall be provided and the staff shall participate in all discussions related to documents on which they work. The WAM or TM will provide LOE estimates with each tasking and the contractor shall not exceed the estimated LOE without justification and approval by the WAM or TM.

EPA is in the process of defining standards for products to be used in the deployment of drinking water

contamination warning systems as part of EPA's plans for national expansion of the WSi program. When these standards have been finalized, they will be provided to the contractor, who shall develop products that conform to these standards as directed by the EPA WAM or TM. These standards may be applicable to products developed under subtasks: 2.4, 2.5, 3.3, 4.4, 5.3, 6.3, 6.4, 6.5 and 7.3.

Task 0: Work Plan, Progress Reports, and Project Tracking (LOE 1,290)

The contractor shall develop a work plan that describes how each task will be performed. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. If a subcontractor(s) is proposed, the contractor shall include information on plans to manage work and contract costs. The work plan shall also provide an analysis of the existing and projected constraints, and the feasibility of accomplishing the project's purpose.

The contractor shall use a previously prepared project specific quality assurance plan (QAPP) as specified above and ensure the quality of secondary data used to complete these tasks. The workplan shall explain that collection, use and analysis of data in this work assignment will be identical to the procedures described in the QAPP completed under WA 0-02. When using a previously approved QAPP, the contractor shall immediately notify the Project Officer and WA manager if any changes to the tasks involving the collection and analysis of the data occur, and prepare a new or modified QAPP. Work on these tasks cannot proceed until the contractor receives notification of the new QAPP approval from the PO via e-mail.

This task also requires the contractor to develop and submit monthly progress and financial reports. Monthly financial reports must include a table with the invoice LOE and costs broken out by the tasks in this WA. Due to anticipated delays in subcontractor billing, the contractor shall also provide subcontractor labor reports to assist with cost projections and project management. In addition, the contractor shall submit a financial tracking spreadsheet populated with incurred and lagging costs for the current billing cycle. The EPA WAM will provide a template for the financial tracking spreadsheet. The monthly financial tracking spreadsheet shall be submitted monthly, no later than the time of submission of the monthly progress and financial report. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved.

The contractor shall provide an overview of contract projects, striving to implement efficiencies in performance when complimentary requirements are issued. The contractor shall assure that duplication of effort relative to other ongoing work assignments under this contract is not occurring.

Additionally, in each monthly progress report, the contractor shall discuss actual progress toward achieving the purpose of this work assignment, including problems encountered, issues that may require resolution, and anticipated timing for completing the goals of the work assignment.

Task 0 Deliverables**:** All products developed under this task shall be submitted to the EPA WAM and alternate WAM. Specific deliverables and due dates under Task 0 are listed in the following table:

Sub-task	Deliverable	Due to EPA
0	WA 1-02 Work Plan including: schedule, staffing plan, LOE, cost estimates, key assumptions, and qualifications of proposed staff	20 days after receipt of WA
0	Monthly progress and financial reports, including updates to the financial tracking spreadsheet	Monthly, as specified in the contract

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 1: Project Management and Coordination (LOE 1,356)

Under this task the contractor shall assist EPA with developing project management and meeting materials and continue to support and facilitate the CIPAC Workgroup on Drinking Water Contamination Warning Systems (the CWS Workgroup).

Sub-task 1.1: Project Management Support

1. Develop and maintain project management materials as requested, including schedules and Gantt charts. For estimating purposes, assume that these materials will be developed or updated on a quarterly basis.
2. Develop and produce briefing materials addressing water security issues. For estimating purposes, assume these materials will be developed on a quarterly basis.

Sub-task 1.2: CIPAC Drinking Water Contamination Warning System Workgroup

The contractor shall continue to provide a broad range of support and facilitation for the activities of the CWS Workgroup. In this period of performance, EPA expects the CWS workgroup to hold up to four in-person meetings, resulting in final recommendations responsive to the workgroup charge. The contractor shall provide a full range of facilitation services for these meetings, including the following activities:

1. Hold discussions as needed with EPA staff and management, as well as with the chairs and members of the CWS workgroup, to prepare for the in-person meetings. These discussions may be necessary to address the meeting schedule, agendas, procedures, content, and other issues.
2. Develop materials directly, and support EPA in the development of materials, as needed for the CWS Workgroup. These materials may include schedules, agendas, discussion frameworks, background documents, issue papers, procedures, presentations, and other documents as needed.
3. Schedule the meetings and associated conference calls, provide a web-enabled service for the calls if needed, and secure facilities for the in-person meetings. The contractor shall establish all participants in advance of the calls and meetings, and ensure that sufficient lodging is available for the in-person meetings.
4. Support the travel of up to four subject matter experts to each meeting.
5. Facilitate the conference calls and meetings, and provide a general summary after each describing major discussion points and next steps.
6. Work with the CWS Workgroup members, chairs, associated staff, and EPA between meetings to facilitate issue resolution as needed.
7. Produce a final report describing the findings of the CWS Workgroup.

Task 1 Deliverables: All products developed under this task shall be submitted to the EPA TM. Specific deliverables and due dates under Task 1 are listed in the following table:

Sub-task	Deliverable	Due to EPA
1.1	Project schedules, Gantt-charts, and other project management materials	As specified in written technical direction
1.1	Briefing materials addressing water security issues	As specified in written technical direction
1.1	Meeting materials	As specified in written technical direction
1.2	Discussions with EPA and CWS workgroup	To be scheduled as needed

1.2	Develop meeting materials	Drafts available for EPA review not later than 2 weeks prior to the meeting. Distribute materials to the CWS workgroup not later than 1 week prior to the meeting.
1.2	Schedule calls/meetings and secure facilities	Not later than 2 weeks prior to the call or meeting
1.2	Facilitate calls/meeting	Draft summary due not later than one week after call/meeting
1.2	Meeting summary	Not later than 2 weeks following the meeting
1.2	Final Report	Draft not later than 3 weeks following the final CWS workgroup meeting.

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 2: System Evaluation (LOE 5,484)

Since 2008, EPA has been evaluating the performance of the Cincinnati contamination warning system according to the general framework laid out in *Water Security Initiative: Approach for Contamination Warning System Evaluation.* While the specific evaluation plans have evolved since this document was finalized, it does define the general scope of the system evaluation effort. In particular, EPA has made substantial progress on the analysis of system-level metrics and the simulation study as documented in the following two analysis plans: *Water Security Initiative: Contamination Warning System Metrics Evaluation* and *Water Security Initiative: Simulation Study Plan for Cincinnati Pilot Evaluation.*

The objective of Task 2 during this period of performance is to build on the work completed by EPA to date. In the current period of performance the contractor shall support this task with staff having an in-depth understanding of the deployed contamination warning system in Cincinnati, experimental design, distribution system modeling, event detection, the production version of the Cincinnati CWS model, and modeling of simulated contamination incidents. Task 2 is divided into seven subtasks: 1) Work Plan Development; 2) Cincinnati CWS Model Development and Testing; 3) Simulation Study Implementation; 4) Business Case Evaluation; 5) Cincinnati CWS Performance Report Development; 6) Evaluation Guidance Development; and 7) Technical Product Development. Each sub-task is described below, and additional details regarding each sub-task will be provided to the contractor through written technical direction.

For estimating purposes, the contractor should assume there will be up to 2 trips, 2 days in length, requiring support of 1 staff per trip.

Sub-task 2.1: Work Plan Development

The contractor shall develop a work plan and schedule covering sub-tasks 2.2 through 2.7 of this work assignment. The work plan shall be developed in MS Excel using a template to be provided by the EPA WAM. Initially the work plan should be developed based on the activities and deliverables listed in this PSOW. However, the contractor shall update the work plan and provide it to the EPA WAM on a weekly basis. Updates will be based on technical direction issued under this task, as well as refinement to the approach for implementing the work specified in the PSOW. The specific day of each week that the contractor will be required to submit the revised work plan to the EPA WAM will be determined through discussions between the contractor and the WAM.

Sub-task 2.2: Cincinnati CWS Model Development and Testing

EPA has a complete beta version of a computer model of the Cincinnati CWS, developed using the ExtendSim and Access platforms. The model has been through unit testing and an initial round of

integration testing. However, upon commencement of production, additional bugs and logic errors were uncovered. To correct these problems, the contractor shall develop a test plan designed to identify additional bugs and issues, and implement this test plan using data generated from 2,023 scenarios executed with the current version of the model under WA 0-02. Based on the results of this testing, the contractor shall develop and implement a model revision plan. Finally, the contractor shall test the revised model to ensure that it functions correctly under a wide range of scenarios and conditions.

Once testing is completed and the model is considered acceptable by EPA, the contractor shall finalize documentation for the design of the "as-built" model. Finally, the contractor shall develop simple user documentation that is sufficient for knowledgeable EPA staff to execute model runs. The contractor shall conduct a webinar to provide training based on this user documentation.

Sub-task 2.3: Simulation Study Implementation

Using the validated model produced under sub-task 2.2, the contractor shall implement the *Simulation Study Plan for Cincinnati Pilot Evaluation* and generate a complete set of results for all 2,023 scenarios. Additionally, the contractor shall execute up to six additional batches of scenarios, each containing no more than 200 scenarios, to evaluate additional aspects of CWS performance. The design of these additional batches will be develop by the EPA WAM and provided to the contractor for processing. The specific batches and analyses may include: sensitivity analyses on specific parameters and alternate CWS configurations. The contractor will be responsible for setting up and executing these batches in ExtendSim / Access.

The contractor shall support the analysis of results from these batches by exporting the results to Excel and building simple workbooks to organize, analyze, and display these results in graphical form.

The contractor shall develop a report to document the methodology and results for the entire Simulation Study. This report will leverage existing materials, including: the *Water Security Initiative: Simulation Study Plan for Cincinnati Pilot Evaluation.* The EPA WAM will develop an outline for this report and provide it to the contractor as a guide for development of the report. The contractor should anticipate development of the report will require two substantial drafts: an initial draft for EPA review and a final version.

Sub-task 2.4: Business Case Evaluation

The contractor shall support EPA in completing the implementation of the business case evaluation (BCE) methodology that was developed, and partially implemented, under WA 0-02. The plan for this evaluation is documented in the *BCE Methodology* document. In addition to completing the BCE for the full Cincinnati CWS, the contractor shall perform a BCE on up to six alternate configurations of the Cincinnati CWS. Alternate configurations will be defined by simply "deactivating" one or more components in various combinations.

The contractor shall support EPA in the development of a report summarizing the results of the BCE, which will leverage existing documentation such as the *BCE Methodology.* The contractor shall develop this report in three stages: outline; review draft; and final draft. The EPA WAM will review the product at each phase of development.

Sub-task 2.5: Cincinnati CWS Performance Report Development

A partial draft of the *Water Security Initiative: Performance of the Cincinnati Contamination Warning System Pilot* report was developed under WA 0-02. During this period of performance, the contractor shall complete this report and prepare it for publication as a formal, EPA report.

The contractor shall complete this sub-task in three phases. First, the contractor shall complete an internal draft of the report for review by the EPA WSi team. Second, the contractor shall revise the document based on EPA comments and prepare a draft of the report for external peer review. Finally, the contractor shall finalize the report by addressing the comments provided by peer reviewers and formatting the document for publication as an EPA report. Additionally, the contractor shall format the report for compliance with standards for the CWS-DT.

Sub-task 2.6: Evaluation Guidance Development

The contractor shall develop a guidance document for the evaluation of drinking water contamination warning systems. Existing documents should be leveraged to develop this guidance; specifically: *Water Security Initiative: Approach for Contamination Warning System Evaluation*; *Water Security Initiative: Contamination Warning System Metrics Evaluation* and *Water Security Initiative: Simulation Study Plan for Cincinnati Pilot Evaluation.*

The contractor shall develop this document in three stages: outline; review draft; and final draft. The EPA WAM will review the product at each phase of development. Additionally, the contractor shall format the final version of the guidance document for compliance with standards for the CWS-DT.

Sub-task 2.7: Technical Product Development

The contractor shall support EPA in the development of up to two technical products that summarize key findings from the system-level evaluation of the Cincinnati CWS pilot. The content for these products will be derived from the outputs of other subtasks under Task 2 in addition to evaluation outputs previously developed by EPA. Specifically, these papers will be based on findings from the Simulation Study, the Business Case Evaluation, and the System-Level Evaluation. These technical products will take the form of peer reviewed journal articles.

Task 2 Deliverables**:** All products developed under this task shall be submitted to the EPA WAM in draft form for review and potential revision prior to acceptance by the EPA WAM. As directed by the EPA WAM, additional reviews may be required from members of the EPA project team, staff from pilot utilities, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
2.1	Initial Task 2 Workplan	20 days after receipt of WA
2.1	Updates to Task 2 Workplan	Weekly
2.2	CWS Model Test Plan and Test Results	20 days after technical direction to develop and implement plan
2.2	CWS Model Revision Plan and fully validated and updated CWS Model	25 days after EPA agrees to the proposed model revisions
2.2	Final documentation of the "as built" document (for internal use only)	15 days after technical direction to finalize documentation
2.2	Users' Documentation and Webinar	15 days after technical direction to finalize documentation
2.3	Compilation of results from the full ensemble of 2,023 scenarios	20 days after technical direction to process the ensemble
2.3	Compilation of results from a CWS simulation batch	10 days after technical direction to process the batch

Sub-task	Deliverable	Due to EPA
2.3	Draft report for the Simulation Study	20 days after technical direction to develop the report
2.3	Final report for the Simulation Study	15 days after technical direction to finalize the report
2.4	Draft report for the BCE	20 days after technical direction to develop the report
2.4	Final report for the BCE	15 days after technical direction to finalize the report
2.5	Internal draft of the *Water Security Initiative: Performance of the Cincinnati Contamination Warning System Pilot*	20 days after technical direction to complete the internal draft
2.5	Review draft of the *Water Security Initiative: Performance of the Cincinnati Contamination Warning System Pilot*	15 days after technical direction to develop the review draft
2.5	Final draft of the *Water Security Initiative: Performance of the Cincinnati Contamination Warning System Pilot*	15 days after technical direction to develop the final draft
2.6	Draft guidance document for development and implementation of a CWS evaluation plan	15 days after technical direction to develop the report
2.6	Final guidance document for development and implementation of a CWS evaluation plan	10 days after technical direction to finalize the report
2.7	Up to two peer-reviewed journal articles summarizing results from the evaluation of the Cincinnati CWS	20 days after technical direction to develop the article

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 3: Sampling and Analysis (S&A) (LOE 1,535)

Sampling and analysis under WSi-CWS includes both routine and incident response activities performed by field and laboratory personnel.

The current task is divided into four subtasks: 1) Evaluation of the GCWW pilot; 2) Support to cooperative agreement pilots; 3) Technical products and guidance; and 4) Development of Contamination Warning System Deployment Tool Content. This task requires contractor staff with knowledge of drinking water analytical laboratory methods and laboratory capabilities typical in small, medium and large utilities. The contractor shall also be familiar with the analytical requirements to implement SDWA compliance methods, methods for the analysis of priority contaminants listed in the Water Contaminant Information Tool (WCIT) and the EPA's Standardized Analytical Methods (SAM).

For estimating purposes, the contractor should assume there will be up to 2 trips, 2 days in length, requiring support of 1 staff per trip.

The contractor shall participate in bi-monthly conference calls with the WAM and TM to discuss tasking, progress and issues relating to all sub-tasks.

Sub-task 3.1: Evaluation of GCWW Pilot

During the previous contract, evaluation of the GCWW pilot sampling and analysis component consisted of training and evaluation drills, monthly performance summary reports, and development and maintenance of sampling and analysis component metrics. In this WA, evaluation of the GCWW pilot

will continue with evaluation of the results Cincinnati CWS Simulation Study and finalization of the S&A Component Evaluation Report. The contractor shall support EPA's effort to finalize the evaluation report for the Sampling and Analysis component, including incorporation of the results from the Simulation Study.

Sub-task 3.2: Support to Cooperative Agreement Pilots

The activities listed below represent EPA's anticipated level of involvement at each of the four cooperative agreement pilots in the area of sampling and analysis. The contractor shall perform the following activities in support of cooperative agreement pilots:

1. Participate in monthly or bi-monthly conference calls with the cooperative agreement pilots. Assume 30 hours of conference calls for this POP.
2. As directed by the EPA TM, provide technical support to the cooperative agreement pilots through review of sampling and analysis component materials and technical documents developed by the cooperative agreement pilots. Assume one review cycle for up to 4 documents.

Sub-task 3.3: Technical Products and Guidance

The development of technical products and guidance materials that convey findings and lessons learned from the pilots will be valuable to the industry as a whole. Contractor staff supporting this sub-task shall have the resources to perform literature searches and obtain full printed or electronic versions of journal articles from the fields of environmental sciences, microbiology, radiochemistry and chemistry as well as be able to read such articles to determine their relevance to requested research. The contractor shall also be able to search government databases for government reports and obtain copies of reports relevant to document development within this task.

The contractor shall perform the following activities to support EPA's development of Technical Products and Guidance materials:

1. Support the development of up to three technical products that convey guidance or recommendations based on experiences from the pilots in the areas of field and laboratory incident response. Assume up to three review cycles per document. The contractor shall bring to this sub-task staff with first-hand experience in the implementation of the S&A component at multiple WSi pilots so that meaningful guidance and products can be developed. Technical products may include preparation of materials necessary to support CIPAC Workgroup requests, journal articles and Power Point presentations.
2. Support development of a two training courses that are primarily in the format of Power Point presentations, training manuals/trainer notes, and possibly short video.
    a. The first training course titled, "Hazard Awareness for Water Utility Personnel Responding to Contamination Warning System Incidents" will be designed for utility staff (both field and lab) responding to water security incidents. The EPA has drafted a course training outline and it has been reviewed by the WSi pilot utilities. The contractor shall utilize staff ***experienced*** in 1) the development of training courses, and 2) the process of hazard awareness and assessment as conducted by water utility personnel. The contractor shall be able to create visually appealing Power Point slides to facilitate the training presentation. The contractor shall create a trainer's manual to accompany the Power Point training slides. Final training materials (electronic, paper, DVD) should be submitted to EPA.
    b. The second course is titled, "Hazard Assessment Tools and Data Interpretation for Utility Field Responders." The EPA has drafted a course training outline and it has been reviewed by the WSi pilot utilities. The contractor shall utilize staff ***experienced*** in 1) the development of training courses, and 2) the process of hazard awareness and assessment as conducted by water utility personnel. The contractor shall be able to create visually appealing Power Point slides to facilitate the training presentation. The

contractor shall create a trainer's manual to accompany the Power Point training slides. Final training materials (electronic, paper, DVD) should be submitted to EPA.

Sub-task 3.4: Development of Contamination Warning System Deployment Tool Content
The contractor shall work with EPA in development of a Contamination Warning System Deployment Tool (CWS-DT), an interactive computer-based program to aid drinking water utilities in Contamination Warning System design and deployment. Under this sub-task, the contractor shall assist EPA in development of S&A content for the CWS-DT as follows:

1. S&A Primer. The contractor shall aid EPA in development of the S&A Primer which reviews and highlights key aspects of S&A for the user.
2. S&A Self-Assessment. The contractor shall aid EPA in developing S&A Self-Assessment content for the CWS-DT, which includes a series of questions designed to reveal gaps in design or development of a S&A component. The contractor shall also develop introductory language/context content that shall accompany each Self-Assessment question. The contractor shall use the Customer Complaint Surveillance Self-Assessment and context language, to be provided by EPA, as a template in developing the S&A Self-Assessment and context language as well as other information provided by the EPA TM.
3. S&A Gap Analysis and Action Plan. The contractor shall aid EPA in drafting an S&A Gap Analysis and Action Plan, based on the Self-Assessment content and recommendations. Recommendations to qualify for each of three categories, Basic, Intermediate and Advanced may not be completed during this POP as they will involve pilot utility and other drinking water stakeholder support to develop. The contractor shall use the Customer Complaint Surveillance Gap Analysis and Action Plan, to be provided by EPA, as templates during development as well as other information provided by the TM.
4. S&A Design Document. The contractor shall participate in scoping discussions to assist EPA in developing a preliminary draft of the S&A Design Document for the CWS-DT. The S&A Design Document shall be designed to serve as underlying guidance that users of the CWSDT will be referred to when given gap recommendations.

Task 3 Deliverables**:** All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, staff from the pilot utility, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
3.1	S&A simulation study analyses and summary results	20 days after receipt of written TD
3.1	Final report of evaluation of the S&A component at GCWW pilot	75 days after receipt of written TD
3.2	Written comments on review of technical materials from cooperative agreement pilots	5 days after receipt[t of written TD
3.3	Draft and final technical products that convey guidance or recommendations or summarize information for CIPAC	20 days after receipt of written TD
3.3	Draft and final hazard awareness and assessment training materials	60 days after receipt of written TD
3.4	Draft and final S&A Primer	30 days after receipt of written TD

Sub-task	Deliverable	Due to EPA
3.4	Draft and final S&A Self-Assessment	60 days after receipt of written TD
3.4	Draft Gaps Analysis and Action plan	60 days after receipt of written TD

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 4: Public Health Surveillance (PHS) (LOE 2,128)

EPA is in the process of finalizing evaluation of the PHS component of the Cincinnati CWS and is supporting the four Cooperative Agreement pilots in execution of their workplans. Furthermore, EPA is developing technical products to support the adoption of PHS by other utilities who are pursuing implementation of a CWS on their own. EPA will require contractor support to realize the successful completion of these activities.

In the current period of performance the contractor shall support this task with staff with an in-depth understanding of public health surveillance, evaluation and analysis of public health data and systems, and public health informatics and data management. Task 4 is divided into four subtasks: 1) Evaluation of the Cincinnati Pilot; 2) Analysis of Health Seeking Behavior (HSB); 3) Evaluation of Automated Event Detection Systems; and 4) Development of CWS- DT PHS Content. Each of these sub-tasks is described below, and additional details regarding each sub-task will be provided to the contractor by written technical direction.

For estimating purposes, the contractor should assume there will be up to 2 trips, 2 days in length, requiring support of 1 staff per trip.

Sub-task 4.1: Evaluation of Cincinnati Pilot
Under previous efforts, EPA has largely completed the evaluation of the PHS component of the Cincinnati pilot and documented these findings in a draft report. Under this sub-task, the contractor shall support EPA in:

1. Finalizing the *Cincinnati PHS Evaluation Report.* The contractor shall finalize the PHS Evaluation report. This shall include incorporation of results of the Simulation Study Results.
2. Peer Reviewed Journal Articles. The contractor shall assist EPA in the development of up to two peer reviewed journal articles based on the results of the Cincinnati PHS evaluation effort. The development of these articles shall be implemented in stages including development of an outline, internal drafts, and final drafts. Development of products in this manner will facilitate input from EPA throughout the process.
3. PowerPoint Presentations The contractor shall assist EPA in the development of up to two power point presentations based on the results of the Cincinnati PHS evaluation effort. The development of these presentations shall be implemented in stages including development of an outline, internal drafts, and final drafts. Development of products in this manner will facilitate input from EPA throughout the process.

Sub-task 4.2: Analysis of Health Seeking Behavior
Fundamentally, all PHS tools rely on the health seeking behaviors of the affected population, and the specific behaviors pursued are often an implicit assumption to the design of many tools. The contractor shall conduct research to gather additional information on health seeking behaviors and evaluate the implications of this research on the design of the PHS component of a drinking water CWS. Under this

sub-task, the contractor shall assist EPA in analysis of health seeking behavior as follows:

1. Follow-on Interviews. Specifically the contractor shall conduct follow-on interviews, based on the literature review with up to four subject matter experts. Feedback from the interviews shall be included in the comprehensive HSB report.

2. Analysis of ED Data. The contractor shall conduct an analysis of Emergency Department (ED) data, available via the Drug and Poison Information Center and Cincinnati Children's Hospital. The analysis shall evaluate trends which help to explain why a patient/family decides to seek care in an ED or outpatient clinic. The results of the analysis will be summarized for inclusion in the comprehensive HSB report.

3. Analysis of PCC Data. The contractor shall conduct an analysis based on data from various Poison Control Centers (PCC). This data will help ascertain why individuals sought the health seeking behavior of calling the Poison Control Center. Results of the analysis shall be summarized in the comprehensive HSB report.

4. Comprehensive HSB Report. The contractor shall prepare a comprehensive summary report or journal article documenting the various results based on the analysis of health seeking behavior. The report shall be developed in stages including a detailed outline, preliminary draft, and final draft to provide EPA with an opportunity to provide input throughout the development process.

Sub-task 4.3: Evaluation of Automated Event Detection Systems

The PHS component of the Cincinnati CWS employed several automated event detection systems (EDS) such as SatScan, EARS, and EpiCenter. However, there are other EDS tools available, and those tools in use in Cincinnati could be configured in a different manner yielding drastically different performance characteristics. Under this sub-task, the contractor shall assist EPA in the evaluation of automated EDS:

1. Finalize PHS EDS Tools Framework. The contractor shall finalize the PHS EDS tools framework to document how the various EDS tools will be analyzed and tested during the study.

2. Conduct Evaluation. Upon finalization of the framework, the evaluation on the performance of the EDS tools shall be conducted. The contractor shall use the Health Impacts & Human Behavior (HIHB) model as well as the data collected from the Cincinnati pilot in the conduct of this study. The data collected from the Cincinnati pilot can provide a reasonable baseline of expected behaviors while the HIHB model can simulate behaviors during a contamination incident.

3. PHS EDS Tools Evaluation Report. The contractor shall summarize the results of this evaluation in an internal report or a peer-reviewed journal article. The report/paper shall be developed in stages including a detailed outline, preliminary draft, and final draft to provide EPA with an opportunity to provide input throughout the development process.

Sub-task 4.4: Development of Contamination Warning System Deployment Tool Content

The contractor shall work with EPA in development of a Contamination Warning System Deployment Tool (CWS-DT), an interactive computer-based program to aid drinking water utilities in Contamination Warning System design and deployment. Under this sub-task, the contractor shall assist EPA in development of PHS content for the CWS-DT as follows:

1. PHS Primer. The contractor shall aid EPA in finalizing the PHS Primer which reviews and highlights key aspects of PHS for the user.

2. PHS Self-Assessment. The contractor shall aid EPA in developing PHS Self-Assessment content for the CWS-DT, which includes a series of questions designed to reveal gaps in design or development of a PHS component. The contractor shall also develop introductory

language/context content that shall accompany each Self-Assessment question. The contractor shall use the Customer Complaint Surveillance Self-Assessment and context language, to be provided by EPA, as a template in developing the PHS Self-Assessment and context language.

Additionally, the contractor shall aid EPA in developing tiered recommendations for each question/potential gap in the PHS Self-Assessment. The recommendation content for each gap shall, where possible, be grouped into three main categories: "Basic", "Intermediate" and "Advanced". The contractor shall use the Customer Complaint Surveillance grouped recommendations, to be provided by EPA, as a template in developing the PHS recommendations.

3. PHS Gap Analysis and Action Plan. The contractor shall aid EPA in developing a PHS Gap Analysis and Action Plan, based on the Self-Assessment content and recommendations. The contractor shall use the Customer Complaint Surveillance Gap Analysis and Action Plan, to be provided by EPA, as templates during development.

4. PHS Design Document. The contractor shall aid EPA in developing a preliminary/partial draft of the PHS Design Document for the CWS-DT. The PHS Design Document shall be designed to serve as underlying guidance that users of the CWSDT will be referred to when given gap recommendations. The contractor shall use the Customer Complaint Surveillance Design Document, to be provided by EPA, as a template in developing the PHS Design document.

Task 4 Deliverables**:** All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, staff from the pilot utility, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
4.1	Final version of the Cincinnati PHS Evaluation report	10 days after technical direction to finalize the report
4.1	Up to two peer-reviewed journal articles summarizing results from the evaluation of the Cincinnati PHS component	20 days after technical direction to develop the article
4.1	Up to two presentations summarizing results from the evaluation of the Cincinnati PHS component	15 days after technical direction to develop the presentation
4.2	Conduct follow-on interviews for analysis of health seeking behavior	20 days after technical direction to develop the report
4.2	Conduct analysis of ED data	20 days after technical direction to develop the report
4.2	Conduct PCC data analysis	20 days after technical direction to develop the report
4.2	Summarize results of HSB research into comprehensive report	20 days after technical direction to develop the report
4.2	Final report on the analysis of health seeking behavior	20 days after technical direction to finalize the report
4.3	Finalize PHS EDS tools framework	20 days after technical direction to develop the report

Sub-task	Deliverable	Due to EPA
4.3	Conduct EDS tools evaluation	20 days after technical direction to develop the report
4.3	Final report on the evaluation of PHS EDS tools	20 days after technical direction to develop the report
4.4	Finalize PHS Primer	10 days after technical direction to finalize the report
4.4	Develop PHS Self Assessment content for CWS DT	10 days after technical direction to develop the framework and outline
4.4	Develop tiered recommendations for each question/potential gap	20 days after technical direction to develop the report
4.4	Develop PHS Gap Analysis and Action Plan	10 days after technical direction to finalize the report
4.4	Develop draft PHS Design Document	20 days after technical direction to develop the report

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 5: Water Quality Monitoring (WQM) Sensor Hardware (LOE 3,492)

EPA is in the process of supporting the WQM component of the four Cooperative Agreement pilots in execution of their workplan. Furthermore, EPA is developing technical products to support the adoption of WQM by other utilities pursuing implementation of a CWS on their own. EPA will require contractor support to realize the successful completion of these activities.

In the current period of performance the contractor shall support this task with staff with an in-depth understanding of water quality monitoring sensors, monitoring network design and hydraulic modeling, and evaluation and analysis of water quality monitoring data. Task 5 is divided into four subtasks: 1) Support of the CWS Deployment Tool; 2) Evaluation of CWS Pilots; 3) Technical Product Development; and 4) *Cost-Effective Options for WQM Deployment* Report Development. Each of these sub-tasks is described below, and additional details regarding each sub-task will be provided to the contractor by written technical direction.

For estimating purposes, the contractor should assume there will be up to 1 trip, 2 days in length, requiring support of 1 staff per trip.

Sub-task 5.1: Support of the CWS Deployment Tool
The contractor shall support EPA in development of a Contamination Warning System Deployment Tool (CWS-DT), an interactive computer-based program to aid drinking water utilities in Contamination Warning System design and deployment. Under this sub-task, the contractor shall assist EPA in development of WQM content for the CWS-DT as follows:

1. WQM Primer. The contractor shall aid EPA in developing a WQM Primer for the entire WQM component which reviews and highlights key aspects of WQM for the user. The contractor shall use the Public Health Primer, to be provided by EPA, as a template in developing the Primer.

2. WQM Self-Assessment. The contractor shall aid EPA in developing WQM Self-Assessment content for the CWS-DT, which includes a series of questions designed to reveal gaps in design or development of a WQM component. The contractor shall also develop introductory

language/context content that shall accompany each Self-Assessment question. The contractor shall use the Customer Complaint Surveillance Self-Assessment and context language, to be provided by EPA, as a template in developing the WQM Self-Assessment and context language.

Additionally, the contractor shall aid EPA in developing tiered recommendations for each question/potential gap in the WQM Self-Assessment. The recommendation content for each gap shall, where possible, be grouped into three main categories: "Basic", "Intermediate" and "Advanced". The contractor shall use the Customer Complaint Surveillance grouped recommendations, to be provided by EPA, as a template in developing the WQM recommendations.

3. WQM Gap Analysis and Action Plan. The contractor shall aid EPA in developing a WQM Gap Analysis and Action Plan, based on the Self-Assessment content and recommendations. T he contractor shall use the Customer Complaint Surveillance Gap Analysis and Action Plan, to be provided by EPA, as templates during development.

4. WQM Design Document. The contractor shall aid EPA in developing a preliminary/partial draft WQM Design Document for the CWS-DT. The WQM Design Document shall be designed to serve as underlying guidance that users of the CWS-DT will be referred to when given gap recommendations. The contractor shall use the Customer Complaint Surveillance Design Document, to be provided by EPA, as a template in developing the document.

Sub-task 5.2: Evaluation of Cincinnati Pilot

Under previous efforts, EPA has largely completed the evaluation of the WQM component of the Cincinnati pilot and documented these findings in a draft report. Under this sub-task, the contractor shall support EPA in finalizing the *Cincinnati WQM Evaluation Report.*

Sub-task 5.3: Technical Product Development

The contractor shall support EPA in the development of up to three technical products that describe various aspects of the WQM component. These technical products may take the form of formal reports and/or PowerPoint presentations. The content for these products will be derived from evaluation output previously developed by EPA, including Sub-task 5.3. These products may be used to support the CIPAC workgroup process.

Sub-task 5.4: *Cost-Effective Options for WQM Deployment* Report Development

Water quality monitoring is an important component of a drinking water CWS, with respect to early detection of contamination incidents as well as dual-use applications. However, it has also proven to be the most expensive component across all five WSi pilots. Lessons learned from the pilots demonstrate that there may be more cost effective ways to deploy a WQM network, and there may be other approaches beyond those employed during the pilots. EPA is currently studying these cost-effective options for WQM component deployment in practical guidance to drinking water utilities. This guidance will be an important element of EPA's strategy to promote national adoption of CWSs.

Under this sub-task, the contractor shall gather information about various approaches to deploying a WQM system, perform a critical analysis of these approaches, and document the results in practical guidance for drinking water utilities. This guidance should convey basic information about the goals and value of water quality monitoring systems, describe various approaches, and present the cost/benefit trade-offs among the various options. The guidance should also highlight dual-use benefits of WQM such as early notification of problems such as: low residual disinfectant, nitrification, corrosion, and DBP formation among others. Information developed under sub-tasks 6.1, 6.2, and 6.3 shall be leveraged to

develop this guidance. Furthermore, the guidance shall be developed in a format that is easy to use and accessible to users with varying degrees of knowledge about water quality monitoring systems.

Task 5 Deliverables**:** All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, staff from the pilot utility, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
5.1	Draft version of CWS Deployment Tool support documents	20 days after technical direction to develop draft
5.1	Final version of CWS Deployment Tool support documents	10 days after technical direction to finalize the document
5.2	Final version of the WQM Component Evaluation for the Cincinnati CWS pilot.	20 days after technical direction to finalize the report
5.3	Up to one peer-reviewed journal articles summarizing results from the evaluation of the CWS pilots.	20 days after technical direction to develop article
5.4	Draft version of *Cost Effective Deployment Options for WQM Networks*	20 days after technical direction to complete the draft
5.4	Final version of *Cost-Effective Deployment Options for WQM Networks* Report	10 days after technical direction to finalize the report

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 6: Water Quality Data Management and Event Detection (LOE 2,250)

Under this task the contractor shall provide technical support to EPA in the area of data management systems and event detection systems (EDS) as part of the WS initiative.

The objective of Task 6 during this period of performance is to build on previously completed efforts as EPA evaluates the fully-deployed Cincinnati CWS and expands the program both to the cooperative agreement pilots and nationally.

In the current period of performance the contractor shall support this task with staff with an in-depth understanding of event detection systems, communication networks, information technology, online monitoring, statistical analysis, software engineering, and drinking water distribution systems hydraulics and water quality. In addition, the contractor shall provide staff who are qualified to modify, support, and operate the EDDIES 4 software as well as other water quality EDS tools.

This task should be closely coordinated with Task 5 of this work assignment. Task 6 is divided into four sub-tasks: 1) Evaluation of WQM / EDSs; 2) Support to the CIPAC CWS Workgroup; 3) Support for CWS Implementation Tool Development; and 4) Maintenance and Support of EDDIES 4. Each of these sub-tasks is described below, and additional details regarding each sub-task will be provided to the contractor by written technical direction.

For estimating purposes, the contractor should assume there will be up to 1 trip, 2 days in length, requiring support of 1 staff per trip.

Sub-task 6.1: Evaluation of WQM / EDSs

Performance of the water quality monitoring component, including data management and event detection systems, will be evaluated to quantify the performance and sustainability of the CWS. Information from the pilots will be used, as will the Simulation Study platform.

Specifically, the contractor shall perform the following activities in support of water quality data management and event detection system evaluation:

1. Support ongoing evaluation of the GCWW pilot, including completion of the GCWW WQM evaluation report.
2. Assist with preparation, implementation, and documentation of up to two focused evaluations to characterize the operation, performance, and sustainability of the deployed EDS. This will likely involve using historical data from a pilot utility. Activities may include creating test datasets; running those datasets through the EDS tool(s); and providing a summary of the results.
3. Assist with planning, implementation, and documentation of focused studies of WQM using the Simulation Study Platform.
4. Support development, review, and/or publication of up to two products summarizing or providing guidance for EDS evaluations. This will likely include updating the previously development Guidance for Evaluating Event Detection Systems and development of one journal article.

Sub-task 6.2: Support of the CIPAC Workgroup

EPA will be presenting information about the effectiveness and sustainability of WQM to the CIPAC workgroup. The contractor will support this with the following activities:

1. Conduct analyses on WQM EDS evaluation data to address workgroup charges. This will likely build on work completed under other task of this or previous work assignments.
2. Assist EPA with development of presentation materials.

Sub-task 6.3: Support for CWS Deployment Tool Development

While there is a separate task for development of the CWS-DT, component-specific materials will need to be produced to include in the tool. This task will focus on the development of materials related to WQM EDS and will be closely coordinated with Task 5. The contractor will support this with the following activities:

1. Support development of the WQM Primer document.
2. Support development of WQM Self-Assessment document.
3. Support development of Gap Analysis document.
4. Develop Action Plan Outputs. Development of focused guidance materials may be required for this activity.

Sub-task 6.4: Maintenance and Support of EDDIES 4

EPA has completed development of EDDIES 4. The contractor shall perform the following activities to maintain and support EDDIES 4.0:

1. Modify software to address issues or bugs identified through use by cooperative agreement pilots, EDS developers, or other evaluators. Update documentation as needed to reflect changes.
2. Support development of a strategy for making EDDIES / CANARY better meet utility needs. An example may be to develop scripts to pull information from a CANARY EDSX to populate the EDDIES database.
3. Implement the EDDIES updates identified above.
4. Provide support as needed to utilities, contractors, and vendors seeking to use the EDDIES software. This will likely include support to the pilot utilities.
5. Provide limited support for vendors or EDS developers seeking to interface with EDDIES (if

necessary - no such vendors or developers have yet been identified).

Task 6 Deliverables**:** All products developed under this task shall be submitted to the EPA TM in draft form for review and potential revision prior to acceptance by the EPA TM. As directed by the EPA TM, additional reviews may be required from members of the EPA project team, staff from the pilot utility, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
6.1	Cincinnati-WQM Evaluation Sub-reports	20 days after technical direction to develop materials
6.1	Study Plan for WQM Investigation using the Simulation Study Platform.	15 days after technical direction to develop plan
6.1	Summary of results from Simulation Study investigation.	20 days after technical direction to develop summary
6.1	Datasets for additional evaluations	15 days after technical direction to develop materials
6.1	Summary of results from additional evaluations.	20 days after technical direction to develop summary
6.2	Technical memo(s) summarizing evaluation results.	15 days after technical direction to develop memos
6.2	Draft and final presentation materials	15 days after technical direction to perform analysis
6.3	Focused materials to support the WQM primer document	15 days after technical direction to develop the materials
6.3	Focused materials to support the WQM self-assessment	15 days after technical direction to develop materials
6.3	Focused materials to support the WQM gap analysis	15 days after technical direction to develop materials
6.3	Focused materials to support the action plan development	15 days after technical direction to develop materials
6.3	Draft and final guidance materials and tools to include in the Implementation Tool	20 days after technical direction to develop materials
6.4	Updated versions of the EDDIES 4.0 software and related documentation	15 days after technical direction to make software updates
6.4	Updated versions of EDDIES technical documents.	15 days after technical direction to update documents

Note: all days in this schedule refer to working days, excluding weekends and holidays.

Task 7: Update the Operational Strategy Guidance Document (LOE 300)

Under this task, the contractor shall update the document, *Water Security Initiative: Interim Guidance on Developing an Operational Strategy for Contamination Warning Systems* (EPA 817-R-08-002) based on lessons learned from the WSi pilots. EPA does not anticipate the need for contractors to travel to fulfill the requirements of this task.

Sub-task 7.1: Compile Lessons Learned from the WSi Pilots

The contractor shall compile lessons learned relevant to the development of an operational strategy and alert investigation procedures from the five WSI pilots. Note that four of the pilots developed a formal operational strategy, while SFPUC incorporated alert investigation procedures into their CMP.

The contractor shall review the following sources of information for potential lessons learned: evaluation reports from the Cincinnati CWS pilot; and drafts of the operational strategy documentation and Alert Investigation procedures developed by the WSi Co-Op pilots. These materials will be furnished by the EPA WAM. To gather additional information on the development and application of alert investigation procedures, the contractor shall facilitate four, one-hour interviews; one interview with representatives from each of the Co-Op utilities.

The contractor shall compile all lessons learned in a MS Excel workbook to facilitate sorting, filtering, and analysis of the data.

Sub-task 7.2: Develop a Revision Plan

The contractor shall develop a revision plan for the *Interim Guidance on Developing an Operational Strategy for Contamination Warning Systems* based on analysis of the lessons learned compiled under sub-task 7.1. The revision plan shall include the following: update to the guidance on the process to develop an operational strategy, update to example alert investigation procedures, update to example alert investigation checklists, update to terminology to be consistent with current WSi standards, and update to formatting to be consistent with the requirements for the CWS-DT.

For substantive revisions, the revision plan shall document the specific section, sub-section, text block, figure, or table to be revised through reference to the current draft of the interim guidance document. The proposed substantive revision shall be clearly and completely described. The EPA WAM will review the revision plan, and the contractor shall revise it to address the comments provided.

Sub-task 7.3: Draft the Revised Operational Strategy Guidance Document

The contractor shall revise the *Interim Guidance on Developing an Operational Strategy for Contamination Warning Systems* based on the approved revision plan developed under sub-task 7.2. The contractor shall prepare an initial draft of the revised Operational Strategy Guidance for review by EPA. The EPA WAM will coordinate the review by EPA staff. The contractor shall compile the comments provided by EPA and develop a second revision plan to address those comments. The EPA WAM will review and approve the second revision plan after all necessary revisions have been made to the plan. Using approved second revision plan, the contractor shall develop a final draft of the Operational Strategy Guidance. This final document shall comply with the style and formatting requirements for the CWS-DT. The final document shall be ready for incorporation into the CWS-DT without further revision. The final document shall also be ready for publication as a stand-alone EPA guidance document.

Task 7 Deliverables**:** All products developed under this task shall be submitted to the EPA WAM in draft form for review and potential revision prior to acceptance by the EPA WAM. As directed by the EPA WAM, additional reviews may be required from members of the EPA project team, staff from pilot utilities, and other stakeholders. Specific deliverables and due dates under this task are listed in the following table:

Sub-task	Deliverable	Due to EPA
7.1	Compilation of lessons learned regarding the development of an operational strategy in an MS Excel workbook	15 days after technical direction to compile lessons learned

Sub-task	Deliverable	Due to EPA
7.2	Final revision plan for the Operational Strategy Guidance document, revised to incorporate EPA comments	20 days after technical direction to develop the revision plan
7.3	Initial draft of the revised Operational Strategy Guidance document	20 days after technical direction to develop the revised document
7.3	Second revision plan to address EPA comments	10 days after the comments are provided to the contractor
7.3	Final draft of the revised Operational Strategy Guidance document	15 days after EPA approves the second revision plan

Note: all days in this schedule refer to working days, excluding weekends and holidays.

V. SCHEDULE/DELIVERABLES

Detailed listings of deliverables and due dates are included for each task in Section IV.

VI. REPORTING REQUIREMENTS

Monthly Progress Reports (including the progress evaluation discussion)
Financial Reports (including the populated financial tracking spreadsheet)
QA Supplemental report (if applicable)

VII. GREEN MEETINGS AND CONFERENCES

The contractor shall follow the provision of EPA prescription 1523.703-1, *Acquisition of environmentally preferable meeting and conference services (May 2007),* for the use of off-site commercial facilities for an EPA event, whether the event is a meeting, conference, training session, or other purpose. Environmental preferability is defined at FAR 2.101, and shall be used when soliciting quotes or offers for meeting/conference services on behalf of the Agency.

QUALITY ASSURANCE SURVEILLANCE PLAN
for the Water Security Division's
Technical, Analytical, and Regulatory Mission Support
Performance Work Statement

Quality Assurance Surveillance Plan

The requirements contained in this work assignment are considered performance-based, focusing on the Agency's desired results and outcomes. The contractor shall be responsible for determining the most effective means by which these requirements will be fulfilled. In order to fulfill the requirements, the contractor shall design innovative processes and systems that can deliver the required services in a manner that will best meet the Agency's performance objectives. This performance-based requirement represents a challenge to the contractor to develop and apply innovative and efficient approaches for achieving results and meeting or exceeding the performance objectives, measures, and standards described below. The Contractor's performance will be reflected in the positive or negative evaluation offered by the Agency in the Past Performance Evaluation (PPE) which is evaluated annually (per the "Past Performance Evaluation" clause in the contract). The Work Assignment Manager shall submit a complete annual review of the areas outlined in the Quality Assurance Surveillance Plan (QASP), included in the contract, which will then be utilized by the Project Officer in preparing the overall evaluations submitted annually in response to the Past Performance Evaluation requirements in the contract.

General Management and Administration			
Performance Requirement	**Measurable Performance Standards**	**Surveillance Methods**	**Incentives/Disincentives**
Management and Communications: The Contractor shall maintain contact with the EPA CO, PO and WAM throughout the performance of the contract and shall immediately bring potential problems to the attention of the appropriate EPA WAM. In cases where issues have a direct impact on project schedules and cost, the contractor shall provide options for EPA's consideration on resolving or mitigate the impacts.	Any issues that impact project schedules and cost shall be brought to the attention of the appropriate EPA WAM within 3 business days of occurrence.	100% of active work assignments under the contract will be reviewed by the EPA WAM monthly (via monthly progress report) to identify unreported issues. The EPA WAM will report any issues to the EPA PO who will bring the issue(s) to the Contractor's attention through the CO.	**Unsatisfactory** rating under the category of Business Relations in the NIH Performance Evaluation System if two or more incidents occur when the contractor does not meet the measurable performance standards for a given contract period.

Timeliness: Services and deliverables shall be in accordance with schedules stated in each work assignment or tasking document, unless amended or modified by an approved EPA action.	Annually, 90% of all submitted deliverables shall be submitted no later than 6 business days past the due date.	100% of active work assignments under the contract will be reviewed by the EPA WAM monthly (via monthly progress report & milestones established for each deliverable) to compare actual delivery dates against those approved. The EPA WAM will report any issues to the EPA PO who will bring the issue(s) to the Contractor's attention through the CO.	**Unsatisfactory** rating under the category of Timeliness in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards.
Cost Management and Control: The Contractor shall monitor, track and accurately report level of effort, labor cost, other direct cost and fee expenditures to EPA through progress reports and approved special reporting requirements. The Contractor shall assign appropriately leveled and skilled personnel to all tasks, practice and encourage time management, and ensure accurate and appropriate time keeping.	The contractor shall manage costs to the level of approved ceiling on the work assignment. The contractor shall notify the WAM/PO when 75% of the approved funding ceiling for the work assignment is reached.	The EPA PO will routinely meet with the Contractor's Project Manager to discuss the work progress and contract and individual work assignment expenditures. The EPA PO shall review the Contractor's monthly progress reports and request the WAMs verification of expenditures and technical progress before authorizing invoice payments.	**Unsatisfactory** rating under the category of Cost Control in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards.

Technical Effort: The analyses or products developed by the contractor shall be factual and defensible and based on sound science and engineering. All data shall be collected from reputable sources and quality assurance measures shall be conducted in accordance with agency requirements and any additional requirements outlined in individual work assignments or technical directives. Any work requiring the contractor to provide options or recommendations shall include the rationale used in selecting the option/recommendation and all other options and considered.	All analyses conducted for EPA by the Contractor must be factual and based on sound science and engineering. All analyses and products (initial and final drafts) shall conform in format and content to requirements specified by the WAM in written technical direction, and should meet the objectives stated in the work assignment. All initial draft documents shall be clearly written at a level appropriate to the targeted audience. All information shall be factual, technically sound, and accurate, with data sources identified. Draft versions of a document shall require no more than two editorial revisions.	EPA will review all analyses conducted by the Contractor and will independently consider the merit. EPA may opt to peer review analyses to further validate merit. The EPA WAM/TM will review initial drafts to assess technical accuracy and editorial quality. The WAM/TM will identify all inaccuracies and needed edits and corrections to the contractor in the initial review of draft documents.	**Unsatisfactory** rating under the category of **QUALITY OF PRODUCT OR SERVICE** in the NIH Performance Evaluation System when the contractor does not meet the measurable performance standards. In addition, the Government may withhold fee payments associated with that segment of the work.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-02

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-10-060	11/30/2010 To 07/31/2012 Base Option Period Number 1	WSI technical support

Contractor: COMPUTER SCIENCES CORPORATION

Specify Section and paragraph of Contract SOW: 2.2, 2.8.1, 2.11

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 08/01/2011 To 07/31/2012

Comments:
This action increases incremental funding by an amount of $300,000. Total funding ceiling is now designated as 1,099,682. LOE is increased by an amount of 2341 hours, therefore total LOE ceiling is now designated as 9164 direct labor hours.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/30/2010 To 07/31/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Steve Allgeier (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-569-7131	
	FAX Number:	
Project Officer Name: Nancy Muzzy (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-569-7864	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Cathy Basu (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2042	
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-02

☐ Other ☒ Amendment Number: 000002

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-10-060	11/30/2010 To 07/31/2012 Base Option Period Number 1	WSI technical support

Contractor: COMPUTER SCIENCES CORPORATION

Specify Section and paragraph of Contract SOW: 2.2, 2.8.1, 2.11

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 08/01/2011 To 07/31/2012

Comments:
This action adds $500,000 of incremental funding to the cost ceiling and 4300 LOE to the direct labor ceiling. New ceilings are $1,599,682 cost and 13,464 direct labor hours.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/30/2010 To 07/31/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Steve Allgeier (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7131 FAX Number:
Project Officer Name: Nancy Muzzy (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7864 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Cathy Basu (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2042 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-02

☐ Other ☒ Amendment Number: 000003

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-10-060	11/30/2010 To 07/31/2012 Base Option Period Number 1	WSI Technical Support

Contractor: COMPUTER SCIENCES CORPORATION

Specify Section and paragraph of Contract SOW: 2.2, 2.8.1, 2.11

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 08/01/2011 To 07/31/2012

Comments:
This action adds $300,000 of incremental funding and 4,781 direct labor hours. This brings the total ceilings on the work assignment to $1,899,682 cost and 18,245 LOE.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/30/2010 To 07/31/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Steve Allgeier (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7131 FAX Number:
Project Officer Name: Nancy Muzzy (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7864 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Cathy Basu (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2042 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-02

☐ Other ☒ Amendment Number: 000004

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-10-060	11/30/2010 To 07/31/2012 Base Option Period Number 1	WSI Technical Support

Contractor: COMPUTER SCIENCES CORPORATION

Specify Section and paragraph of Contract SOW: 2.2, 2.8.1, 2.11

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 08/01/2011 To 07/31/2012

Comments:
This action increases the incremental funding on the work assignment by an amount of $150,000. This increases the funding ceiling from $1,899,682 to an amount of $2,049,682. Because of declining labor costs per hour no change in the LOE ceiling is necessary, and it remains at 17,693 tech LOE, 18,245 total LOE.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 11/30/2010 To 07/31/2012 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: Steve Allgeier (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-569-7131	
	FAX Number:	
Project Officer Name: Nancy Muzzy (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-569-7864	
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Cathy Basu (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 513-487-2042	
	FAX Number:	